

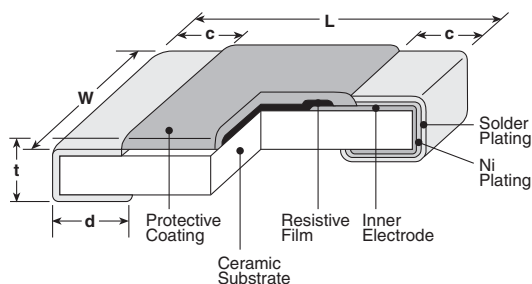
## surge current thick film chip resistor



## features

- Superior to RK73B/RK73H series in surge/pulse withstanding voltage
- SG73: Untrimmed, superior surge/pulse and ESD withstanding  
SG73P: Pulse withstanding; down to  $\pm 0.5\%$  tolerance  
SG73S: ESD withstanding; down to  $\pm 0.5\%$  tolerance
- Marking: SG73: White three-digit on wine red protective coat  
SG73P: Black three-digit on green protective coating  
SG73S: White three-digit on green protective coating  
SG73P/S 1E, 1J: no marking  
SG73P/S 1E: Black coating
- Products with lead-free terminations meet EU RoHS requirements. EU RoHS regulation is not intended for Pb-glass contained in electrode, resistor element and glass.
- AEC-Q200 Qualified: 0402(1E), 0603(1J), 0805(2A), 1206(2B), 1210(2E), 2010(2H/W2H), 2512(3A/W3A)

## dimensions and construction



Type (Inch Size Code)	Dimensions inches (mm)				
	L	W	c	d	t
SG73P1E, SG73S1E (0402)	.039 $\begin{smallmatrix} +.004 \\ -.002 \end{smallmatrix}$ (1.0 $\begin{smallmatrix} +0.1 \\ -0.05 \end{smallmatrix}$ )	.02 $\pm$ .002 (0.5 $\pm$ 0.05)	.006 $\pm$ .004 (0.15 $\pm$ 0.1)	.010 $\begin{smallmatrix} +.002 \\ -.004 \\ +0.05 \\ -.1 \end{smallmatrix}$	.014 $\pm$ .002 (0.35 $\pm$ 0.05)
SG731J,SG73P1J SG73S1J (0603)	.063 $\pm$ .008 (1.6 $\pm$ 0.2)	.031 $\pm$ .004 (0.8 $\pm$ 0.1)	.012 $\pm$ .004 (0.3 $\pm$ 0.1)	.012 $\pm$ .004 (0.3 $\pm$ 0.1)	.018 $\pm$ .004 (0.45 $\pm$ 0.1)
SG732A (0805)	.079 $\pm$ .008 (2.0 $\pm$ 0.2)	.049 $\pm$ .004 (1.25 $\pm$ 0.1)	.016 $\pm$ .008 (0.4 $\pm$ 0.2)	.012 $\begin{smallmatrix} +.008 \\ -.004 \\ +0.2 \\ -.1 \end{smallmatrix}$	.02 $\pm$ .004 (0.5 $\pm$ 0.1)
SG73P2A, SG73S2A (0805)			.012 $\begin{smallmatrix} +.008 \\ -.004 \\ +0.2 \\ -.1 \end{smallmatrix}$		

Type (Inch Size Code)	Dimensions inches (mm)					
	L	W	c	d	t	
SG732B (1206)	.126 $\pm$ .008 (3.2 $\pm$ 0.2)	.063 $\pm$ .008 (1.6 $\pm$ 0.2)	.02 $\pm$ .012 (0.5 $\pm$ 0.3)	.016 $\begin{smallmatrix} +.008 \\ -.004 \\ +0.2 \\ -.1 \end{smallmatrix}$	.024 $\pm$ .004 (0.6 $\pm$ 0.1)	
SG73P2B, SG73S2B (1206)			.016 $\begin{smallmatrix} +.008 \\ -.004 \\ +0.2 \\ -.1 \end{smallmatrix}$			
SG732E (1210)			.102 $\pm$ .008 (2.6 $\pm$ 0.2)			.016 $\begin{smallmatrix} +.008 \\ -.004 \\ +0.2 \\ -.1 \end{smallmatrix}$
SG73P2E, SG73S2E (1210)			.102 $\pm$ .008 (2.6 $\pm$ 0.2)			.016 $\begin{smallmatrix} +.008 \\ -.004 \\ +0.2 \\ -.1 \end{smallmatrix}$
SG732H (2010)	.197 $\pm$ .008 (5.0 $\pm$ 0.2)	.098 $\pm$ .008 (2.5 $\pm$ 0.2)	.02 $\pm$ .012 (0.5 $\pm$ 0.3)	.016 $\begin{smallmatrix} +.008 \\ -.004 \\ +0.2 \\ -.1 \end{smallmatrix}$	.026 $\pm$ .006 (0.65 $\pm$ 0.15)	
SG73W2H (2010)						.026 $\pm$ .006 (0.65 $\pm$ 0.15)
SG733A (2512)	.248 $\pm$ .008 (6.3 $\pm$ 0.2)	.122 $\pm$ .008 (3.1 $\pm$ 0.2)	.02 $\pm$ .012 (0.5 $\pm$ 0.3)	.016 $\begin{smallmatrix} +.008 \\ -.004 \\ +0.2 \\ -.1 \end{smallmatrix}$	.026 $\pm$ .006 (0.65 $\pm$ 0.15)	
SG73W3A (2512)						.026 $\pm$ .006 (0.65 $\pm$ 0.15)

## New Part #

SG73	2B	T	TD	102	K
Type	Size	Termination Material	Packaging	Nominal Resistance	Tolerance
SG73 SG73P SG73S	NEW1E 1J 2A 2B 2E W2H W3A 2H 3A	T: Sn L: SnPb: (NOT available in SG732H/W2H, SG733A/W3A, SG73P series, SG73S series)	TP: 0402, 0603, 0805: 7" 2mm pitch punch paper TD: 0603, 0805, 1206, 1210: 7" 4mm pitch punched paper TDD: 0603, 0805, 1206, 1210: 10" paper tape TE: 0805, 1206, 1210, 2010 & 2512: 7" embossed plastic TED: 0805, 1206, 1210, 2010 & 2512: 10" embossed plastic For further information on packaging, please refer to Appendix A	$\pm 0.5\%$ , $\pm 1\%$ : 3 significant figures + 1 multiplier "R" indicates decimal on value $< 100\Omega$ $\pm 2\%$ , $\pm 5\%$ , $\pm 10\%$ , $\pm 20\%$ : 2 significant figures + 1 multiplier "R" indicates decimal on value $< 10\Omega$	D: $\pm 0.5\%$ F: $\pm 1\%$ G: $\pm 2\%$ J: $\pm 5\%$ K: $\pm 10\%$ M: $\pm 20\%$

## applications and ratings

Part Designation	Power Rating @ 70°C	T.C.R. (ppm/°C) Max.	Resistance Range				Absolute Maximum Working Voltage	Absolute Maximum Overload Voltage	Rated Terminal Part Temp.	Operating Temp. Range
			(E-24)/E-96 (D±0.5%)	(E-24)/E-96 (F±1%)	(E-24) (G±2%, J±5%)	(E-12) (K±10%, M±20%)				
SG731J (0603)	0.1W	±400 ±200	—	—	—	1Ω - 8.2Ω 10Ω - 1MΩ	50V	100V	125°C	
SG732A (0805)	0.125W	±400 ±200	—	—	—	1Ω - 8.2Ω 10Ω - 1MΩ	150V	200V		
SG732B (1206)	0.25W .33W***	±400 ±200	—	—	—	1Ω - 8.2Ω 10Ω - 1MΩ	200V	400V		
SG732E (1210)	0.33W	±400 ±200	—	—	—	1Ω - 8.2Ω 10Ω - 1MΩ				
SG732H/W2H (2010)	0.75W	±400 ±200	—	—	—	1Ω - 8.2Ω 10Ω - 1MΩ				
SG733A/W3A (2512)	1W	±400 ±200	—	—	—	1Ω - 8.2Ω 10Ω - 1MΩ				
SG73P1E SG73S1E (0402)	0.125W .2W***	±200	10Ω - 1MΩ	1Ω - 1MΩ	1Ω - 10MΩ	—	50V	100V	85°C	-55°C to +155°C
SG73P1J SG73S1J (0603)	0.2W .25W***	±100**							95°C	
SG73S2A SG73P2A (0805)	0.25W .5W***	±200	10Ω - 1MΩ	1Ω - 1MΩ	1Ω - 10MΩ	—	150V 200V***	200V 400V***	100°C	
SG73S2B SG73P2B (1206)	0.33W .5W***	±200	10Ω - 1MΩ	1Ω - 1MΩ	1Ω - 10MΩ	—	200V	400V	110°C	
SG73S2E SG73P2E (1210)	0.5W	±200	10Ω - 1MΩ	1Ω - 1MΩ	1Ω - 10MΩ	—				

Parentheses indicate EIA package size codes.

\*\* Cold T.C.R.: +150 x 10<sup>-6</sup>/K

\*\*\* Please refer to the "Higher Power Ratings" statement in the beginning of the catalog.

Also, please contact KOA prior to usage and for the Max. working voltage and Max. overload voltage.

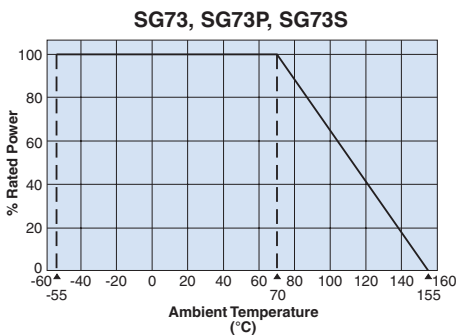
Rated ambient temperature: +70°C

Rated voltage = √Power rating x resistance value or max. working voltage, whichever is lower

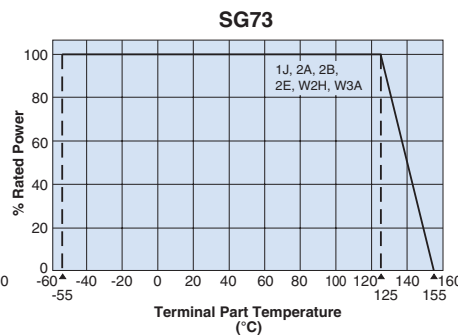
Please contact KOA Speer for how to handle a specific surge/pulse

## environmental applications

### Derating Curve

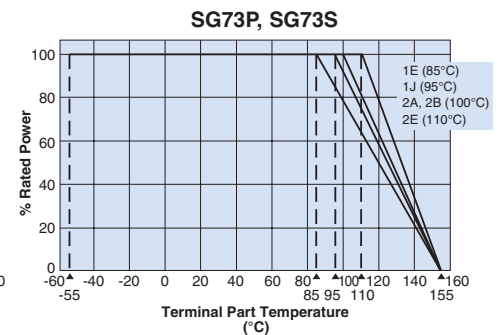


For resistors operated at an ambient temperature of 70°C or above, a power rating shall be derated in accordance with the derating curve.



For resistors operated at a terminal part temperature of described for each size or above, a power rating shall be derated in accordance with the derating curve.

Please refer to "Introduction of the derating curve based on the terminal part temperature" on the beginning of our catalog before use.



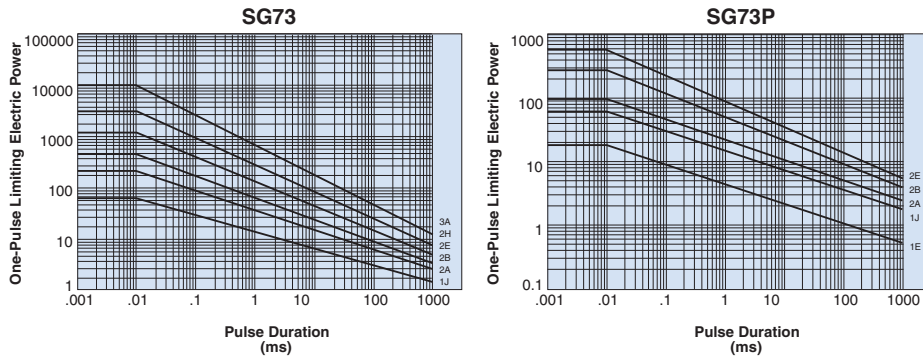
Additional environmental applications can also be found at [www.koaspeer.com](http://www.koaspeer.com)

Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

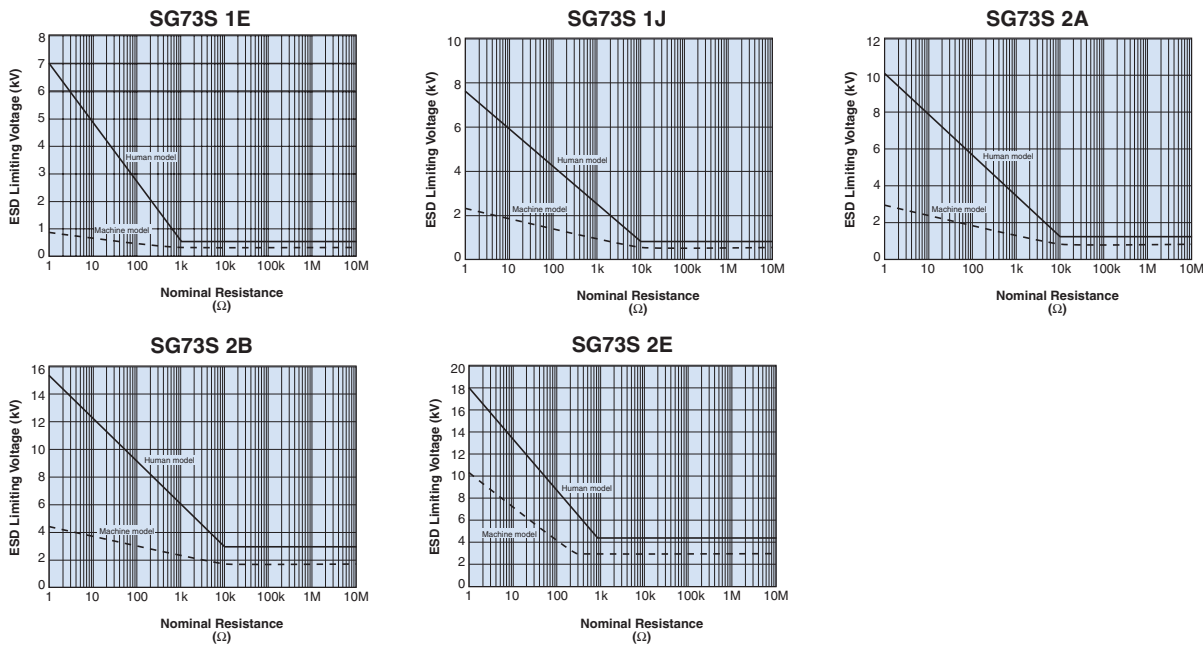
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## environmental applications

### One-Pulse Limiting Electric Power



### ESD Limiting Voltage



### Performance Characteristics

Parameter	Requirement $\Delta R \pm(\%+0.1\Omega)$		Test Method
	Limit	Typical	
Resistance	Within specified tolerance	—	25°C
T.C.R.	Within specified T.C.R.	—	+25°C/-55°C and +25°C/+125°C
Overload (Short time)	±2%	±0.5%	Rated Voltage x 2.5 for 5 seconds
Resistance to Solder Heat	±1%	±0.75%	260°C ± 5°C, 10 seconds ± 1 second
Rapid Change of Temperature	±0.5%	±0.3%	-55°C (30 minutes), +125°C (30 minutes), 100 cycles
Moisture Resistance	±3%	±0.75%	40°C ± 2°C, 90%~95%RH, 1000 hours; 1.5 hr ON, 0.5 hr OFF cycle
Endurance at 70°C	±3%	±0.75%	70°C ± 2°C, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle
High Temperature Exposure	±1%	±0.3%	+155°C, 1000 hours